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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,878	03/08/2004	Chi-Ming Huang	250913-1150	2105

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EXAMINER

UHLENHAKE, JASON S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

clm

<b>Office Action Summary</b>	<b>Application No.</b> 10/795,878	<b>Applicant(s)</b> HUANG ET AL.	
	<b>Examiner</b> Jason Uhlenhake	<b>Art Unit</b> 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 11, 15, 16, 18, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al (U.S. Pat. 6,886,925)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

#### ***Chen et al discloses:***

- ***regarding claim 1***, providing a substrate and a porous material (Figure 9; Column 2, Lines 12 – 31; Column 3, Lines 47 - 53)
- forming a heating layer on the substrate; forming a conductive layer on the substrate, wherein the conductive layer conducts a current to the heating layer, and a

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heating area is defined by the conductive layer and the heating layer; (Column 2, Lines 14 – 31; Column 3, Lines 21 – 35)

- forming a chamber (91) for storing liquid above the heating area, wherein the chamber includes a first side and a second side, the first side faces the heating area, the second side is connected to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side; (Figure 9)
- placing the porous material (90) on the chamber (91) so that the liquid flows into the chamber therethrough (Figure 9; Column 2, Lines 29 – 31)

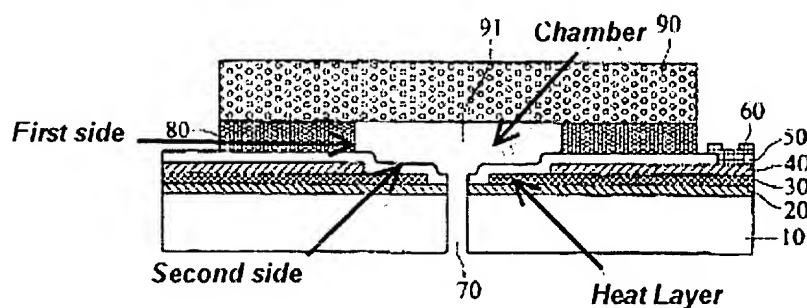


FIG. 9

- **regarding claim 11**, a substrate; heating layer disposed on the substrate to dispense liquid; conductive layer disposed on the substrate to conduct a current to the heating layer, wherein a heating area is defined by the conductive layer and the heating layer (Figure 9; Column 2, Lines 14 – 31; Column 3, Lines 21 – 35)
- chamber, disposed on the heating area, having a first side and a second side, wherein the first side faces the heating area, the second side is connected to the

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first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side (Figure 9)

- porous material disposed on the substrate, wherein the liquid flows into the chamber through the porous material (Figure 9; Column 2, Lines 29 – 31)

- **regarding claim 15**, comprising a nozzle plate (209) disposed on the second side of the chamber (Figure 1)

- **regarding claim 16**, providing a substrate, a porous material, and a nozzle plate (Figure 9; Column 2, Lines 12 – 31; Column 3, Lines 47 - 53)

- forming a heating layer on the substrate; forming a conductive layer on the substrate, wherein the conductive layer conducts a current to the heating layer, and a heating area is defined by the conductive layer and the heating layer; (Figure 9; Column 2, Lines 14 – 31; Column 3, Lines 21 – 35)

- forming an adhesive layer (80) on the conductive layer (40) (Figure 9)

- placing the porous material on the adhesive layer to form a chamber (91) for storing liquid, wherein the liquid flows into the chamber through the porous material, the chamber includes a first side and a second side, the first side faces the heating area, the second side is connected to the first side, and the chamber is formed with an exit, from which the liquid is dispensed, on the second side; (Figure 9)

- adhering the nozzle plate (209) to the second side of the chamber, wherein the nozzle plate includes at least one orifice (Figure 1)

- **regarding claim 18**, wherein the porous material (90) includes a groove by cutting (no structural limitation for an apparatus claim, therefore it is not given

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patentable weight) to form the chamber before placing on the adhesive layer (80)

(Figure 9)

- **regarding claim 19**, a substrate; heating layer disposed on the substrate to dispense liquid; conductive layer disposed on the substrate to conduct a current to the heating layer, wherein a heating area is defined by the conductive layer and the heating layer (Figure 9; Column 2, Lines 14 – 31; Column 3, Lines 21 – 35)

- an adhesive layer (80) on the conductive layer (40) (Figure 9)
- porous material, disposed on the substrate, including a chamber (91), wherein the liquid flows into the chamber through the porous material, the chamber includes a first side and a second side, the first side faces the heating area, the second side is connected to the first side (Figure 9)

- a nozzle plate (209), disposed on the second side of the chamber, including at least one orifice (Figure 1)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 12, 17 are rejected under 35 U.S.C. 103(a) as being obvious over Chen et al (U.S. Pat. 6,886,925) in view of Park et al (U.S. Pat. 6,702,428).

***Chen et al discloses all of the claimed limitations except for the following:***

- **regarding claim 2**, wherein the chamber is formed by light-sensitive polymer via exposure and developing
- **regarding claim 3**, wherein the light-sensitive polymer is a dry film or a liquid photoresist
- **regarding claim 12**, wherein the chamber is light-sensitive polymer
- **regarding claim 17**, wherein the adhesive layer comprises light-sensitive polymer

***Park et al discloses:***

- **regarding claim 2**, wherein the chamber is formed by light-sensitive polymer via exposure and developing (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.
- **regarding claim 3**, wherein the light-sensitive polymer is a dry film or a liquid photoresist (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.
- **regarding claim 12**, wherein the chamber is light-sensitive polymer (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.
- **regarding claim 17**, wherein the adhesive layer comprises light-sensitive polymer (Column 6, Lines 50 – 67; Column 7, Lines 1 – 10), for the purpose of preventing delamination and improving ejection characteristics of the ink droplets.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of the chamber is formed by light-sensitive polymer via exposure and developing; the light-sensitive polymer is a dry film or a liquid photoresist; the adhesive layer comprises light-sensitive polymer as taught by Park et al into the device of Chen et al, for the purpose of preventing delamination and improving the ejection characteristics of the ink droplets.

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,886,925) as modified by Park et al (U.S. Pat. 6,702,428) as applied to claim 1 above, and further in view of Singh et al (U.S. Pat. 6,210,522).

***Chen et al as modified by Park et al discloses:***

- ***regarding claim 4***, an adhesive layer (80) for the porous material (90) (Chen et al: Figure 9)
- a light-sensitive polymer (Park et al: Column 6, Lines 50 – 67; Column 7, Lines 1 – 10)

***Chen et al as modified by Park et al does not disclose expressly the following:***

- ***regarding claim 4***, adhering materials by use of hot press

***Singh et al discloses:***

- ***regarding claim 4***, adhering materials by use of hot press (Column 6, Lines 7 – 17), for the purpose of reducing or eliminating ink from wicking between the



circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

At the time the invention was made it would have been obvious to a person skilled in the art to incorporate the teaching of adhering materials by use of hot press as taught by Singh et al into the device of Chen et al as modified by Park et al, for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

Claims 5, 6, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,886,925) in view of Song et al (U.S. Pub. 2004/0100535).

***Chen et al discloses:***

- ***regarding claim 7***, forming an adhesive layer on the chamber after forming the chamber (Figures 2 – 9)

***Chen does not disclose expressly the following:***

- ***regarding claim 5***, wherein the chamber is formed by electroplating metal
- ***regarding claim 6***, wherein the metal is Ni

***Song et al discloses:***

- ***regarding claim 5***, wherein the chamber is formed by electroplating metal (Paragraph 0032), for the purpose of having a high thermal conductivity and dissipate heat from the heater
- ***regarding claim 6***, wherein the metal is Ni (Paragraph 0027), for the purpose of having a high thermal conductivity and dissipate heat from the heater

At the time the invention was made, it would have been obvious to a person skilled in the art to incorporate the teaching of the chamber is formed by electroplating metal; wherein the metal is Ni as taught by Song et al into the device of Chen et al, for the purpose of having a high thermal conductivity and dissipate heat from the heater

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,886,925) as modified by Song et al (U.S. Pub. 2004/0100535) as applied to claim 1 above, and further in view of Murai et al (U.S. Pub. 2003/0227518).

***Chen et al as modified by Song et al discloses all of the claimed limitations except for the following:***

- ***regarding claim 8***, wherein the adhesive layer comprises metal with low melting point

***Murai et al discloses:***

- ***regarding claim 8***, wherein the adhesive layer comprises metal with low melting point (Paragraph 0054), for the purpose of improving adhesion to the mounting surface.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of the adhesive layer comprises metal with low melting point as taught by Murai et al into the device of Chen et al as modified by Song et al, for the purpose of improving adhesion to the mounting surface.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,886,925) as modified by Song et al (U.S. Pub. 2004/0100535) as applied to claim 1 above, and further in view of Takeda et al (U.S. Pub. 2002/0054201).

***Chen et al as modified by Song et al discloses all of the claimed limitations except for the following:***

- ***regarding claim 9***, wherein the adhesive layer is formed by electroplating or screen printing

***Takeda et al discloses:***

- ***regarding claim 9***, wherein the adhesive layer is formed by electroplating or screen printing (Paragraph 0185), for the purpose of obtaining sufficient adhering force.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of the adhesive layer is formed by electroplating or screen printing as taught by Takeda et al into the device of Chen et al as modified by Song et al, for the purpose of obtaining sufficient adhering force.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. Pat. 6,886,925) as modified by Song et al (U.S. Pub. 2004/0100535) as applied to claim 1 above, and further in view of Singh et al (U.S. Pat. 6,210,522).

***Chen et al as modified by Song et al discloses:***

- ***regarding claim 10***, and adhesive layer (80) covered by the porous material (90) (Chen et al: Figure 9)

***Chen et al as modified by Song et al does not disclose expressly:***

- ***regarding claim 10***, adhering materials by use of hot press

***Singh et al discloses:***

- ***regarding claim 10***, adhering materials by use of hot press (Column 6, Lines 7 – 17), for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting.

At the time the invention was made it would have been obvious to a person skilled in the art to incorporate the teaching of adhering materials by use of hot press as taught by Singh et al into the device of Chen et al as modified by Song et al, for the purpose of reducing or eliminating ink from wicking between the circuit and substrate and therefore preventing ink from causing corrosion or electrical shorting..

Claims 13, 14 are rejected under 35 U.S.C. 103(a) as being obvious over Chen et al (U.S. Pat. 6,886,925) in view of Song et al (U.S. Pub. 2004/0100535).

***Chen et al discloses:***

- ***regarding claim 14***, comprising and adhesive layer (80) disposed between the chamber and the porous material (90) (Figure 9)

***Chen et al does not disclose expressly:***

- ***regarding claim 13***, wherein the chamber is metal

***Song et al discloses:***

- ***regarding claim 13***, wherein the chamber is metal (Paragraph 0032), for the purpose of having a high thermal conductivity and dissipate heat from the heater

At the time the invention was made, it would have been obvious to a person skilled in the art to incorporate the teaching of the chamber is metal as taught by Song et al into the device of Chen et al, for the purpose of having a high thermal conductivity and dissipate heat from the heater

### ***Response to Arguments***

Applicant's arguments filed 5/24/2006 have been fully considered but they are not persuasive. Please see the above rejections regarding Chen et al. Applicant argues that the structure of Chen et al does not disclose the first side facing the heating layer and an exit formed through the second side of the chamber. Chen et al discloses a first side facing the heating layer and an exit formed through the second side as claimed, refer to figure 9 of Chen et al. Furthermore, the position of the first and second sides cited in the limitation of the claims are not clearly defined, therefore Chen et al does disclose the limitation as cited in the claims.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

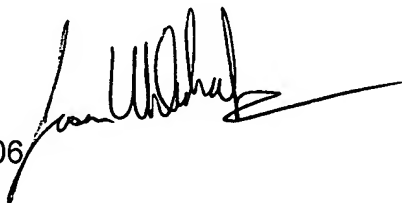
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Uhlenhake whose telephone number is (571) 272-5916. The examiner can normally be reached on Monday - Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSU  
July 24 2006



 8/06  
K. FIGGINS  
PRIMARY EXAMINER